ATTACHMENT A

Application No.: 10/813,783
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Examiner: Julian W. Woo
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Proposed Amendments to the Claims

1. (Currently Amended) A method for endovascular occlusion of a blood vessel area, comprising:

advancing a catheter percutaneously and transluminally until a distal opening of said catheter is located at a blood vessel area to be occluded;

providing a wire body comprising a front end, a back end, and a section connecting said front end and said back end, wherein said section is substantially straight in an unstressed pre-deployment ~~a relaxed~~ condition, a length of said section being larger than a diameter of said blood vessel area;

inserting said wire body into said catheter, said section of said wire body being substantially in said unstressed pre-deployment ~~relaxed~~ condition within said catheter;

mechanically pushing said wire body forward through said catheter until said front end of said wire body is pushed out of said distal opening of said catheter;

abutting a first wall portion of said blood vessel area with said front end of said wire body, thereby compressively loading said wire body and frictionally locking said front end against said first wall portion; and

continuing to mechanically push said wire body out of said distal opening of said catheter, thereby curving said section of said wire body toward a second wall portion of said blood vessel area;

wherein said section of said wire body frictionally locks against said second wall portion of said blood vessel area when said section is compressed between said first and second wall portions due to said wire body being mechanically pushed forward, thereby forming a portion of said wire body crossing said blood vessel area that is ~~and~~ frictionally locked to said first wall portion and said second wall portion ~~without a change in temperature of said wire body~~.

2. (Original) The method according to claim 1, wherein said blood vessel area to be occluded is an aneurysm.

3. (Currently Amended) The method according to claim 2, wherein said front end of said wire body is curved in said unstressed pre-deployment ~~relaxed~~ condition at least 120° and said back end of said wire body is curved in said ~~relaxed~~ condition at least 120°.

4. (Original) The method according to claim 3, further comprising repeating said continuing step until said section of said wire body has assumed a complexly curved shape, whereby said section repeatedly crosses said blood vessel area and frictionally locks against wall portions of said blood vessel area, said section thereby forming curvatures in said complexly curved shape which vary continuously without breakpoints.

5. (Original) The method according to claim 1, wherein said blood vessel area to be occluded is a vessel lumen.

6. (Previously Presented) The method according to claim 5, further comprising retracting said catheter between said abutting and said continuing steps, wherein a free length of said section of said wire body extends between said front end of said wire body and said distal opening of said

catheter, said continuing step thereby column loading said section as said wire body is mechanically pushed.

7. (Original) The method according to claim 6, further comprising repeating said continuing step until said section of said wire body has assumed a complexly curved shape, whereby said section repeatedly crosses said blood vessel area and frictionally locks against wall portions of said blood vessel area, said section thereby forming curvatures in said complexly curved shape which vary continuously without breakpoints.

8. (Currently Amended) The method according to claim 7, wherein said front end of said wire body in said unstressed pre-deployment ~~relaxed~~ condition is formed as a spiral with a decreasing helix diameter in the direction of said front end, a largest helix diameter corresponding generally to said diameter of said blood vessel area, and said length of said section of said wire body being at least six times said diameter of said blood vessel area.

9. (Original) The method according to claim 1, further comprising repeating said continuing step until said section of said wire body has assumed a complexly curved shape, whereby said section repeatedly crosses said blood vessel area and frictionally locks against wall portions of said blood vessel area, said section thereby forming curvatures in said complexly curved shape which vary continuously without breakpoints.

10. (Currently Amended) The method according to claim 1, wherein said front end of said wire body is curved in said unstressed pre-deployment ~~relaxed~~ condition at least 120°.

11. (Currently Amended) The method according to claim 1, wherein said back end of said wire body is curved in said unstressed pre-deployment ~~relaxed~~ condition between 140° and 340°.

12. (Original) The method according to claim 1, wherein said length of said section of said wire body is at least 20 mm.

13. (Original) The method according to claim 1, wherein said length of said section of said wire body is at least 90 mm.

14. (Original) The method according to claim 1, wherein said wire body is made of a thread extending helically around a center line of said wire body.

15. (Original) The method according to claim 1, wherein said wire body is further characterized by the absence of occlusion hairs, an inner lumen of said catheter being sized substantially to said wire body.

16. (Original) The method according to claim 15, wherein said wire body is made of a thread extending helically around a center line of said wire body.

17. (Original) The method according to claim 1, wherein said section of said wire body has a spring constant of $c = P/e$ measured on a 50 mm long portion of said wire body, P being an axially acting applied force measured in N and e being a change of length measured in mm, said spring constant being in the interval of $0.0015 \text{ N/mm} \leq c \leq 0.08 \text{ N/mm}$.

18. (Original) The method according to claim 1, wherein said front end of said wire body has a largest external diameter ranging from 2 to 13

mm, said length of said section of said wire body ranges from 30 and 300 mm, and said back end of said wire body has a largest external diameter ranging from 4 to 8 mm.

19. (Currently Amended) A method for endovascular occlusion of an aneurysm, comprising:

advancing a catheter percutaneously and transluminally until a distal opening of said catheter is located at an aneurysm to be occluded;

providing a wire body comprising a front end, a back end, and a section connecting said front end and said back end, said front end and said back end being curved and said section being substantially straight in an unstressed pre-deployment ~~a relaxed~~ condition, a length of said section being larger than a diameter of said aneurysm, wherein said wire body is made of a thread extending helically around a center line of said wire body and said wire body is characterized by the absence of occlusion hairs, an inner lumen of said catheter being sized substantially to said wire body;

inserting said wire body into said catheter, said section of said wire body being substantially in said unstressed pre-deployment ~~relaxed~~ condition within said catheter;

mechanically pushing said wire body forward through said catheter until said front end of said wire body is pushed out of said distal opening of said catheter;

abutting a first wall portion of said aneurysm with said front end of said wire body, thereby compressively loading said wire body and frictionally locking said front end against said first wall portion;

continuing to mechanically push said wire body out of said distal opening of said catheter, thereby curving said section of said wire body toward a second wall portion of said aneurysm, wherein said section frictionally locks against said second wall portion when said section is compressed between said first and second wall portions due to said wire body

being mechanically pushed forward, thereby forming a portion of said wire body crossing said aneurysm and frictionally locked to said first wall portion and said second wall portion; and

repeating said continuing step until said section of said wire body has assumed a complexly curved shape, whereby said section repeatedly crosses said aneurysm and frictionally locks against wall portions of said aneurysm when said section is compressed between said wall portions due to said wire body being mechanically pushed forward, said section thereby forming curvatures in said complexly curved shape which vary continuously without breakpoints and without a change in temperature of said wire body.

20. (Currently Amended) A method for endovascular occlusion of a blood vessel lumen, comprising:

advancing a catheter percutaneously and transluminally until a distal opening of said catheter is located at a blood vessel lumen to be occluded;

providing a wire body comprising a front end, a back end, and a section connecting said front end and said back end, said front end in an unstressed pre-deployment ~~a relaxed~~ condition being formed as a spiral with a decreasing helix diameter in the direction of said front end, a largest helix diameter corresponding to a diameter of said blood vessel lumen, and said section being substantially straight in said unstressed pre-deployment ~~relaxed~~ condition, a length of said section being at least six times said diameter of said blood vessel lumen, wherein said wire body is made of a thread extending helically around a center line of said wire body and said wire body is characterized by the absence of occlusion hairs, an inner lumen of said catheter being sized substantially to said wire body;

inserting said wire body into a proximal end of said catheter, said catheter thereby loading said wire body into a substantially straight condition;

mechanically pushing said wire body forward through said catheter until said front end of said wire body is pushed out of said distal opening of said catheter;

abutting a first wall portion of said blood vessel lumen with said front end of said wire body, thereby frictionally locking said front end against said first wall portion;

retracting said catheter to create a free length of said section of said wire body extending between said front end of said wire body and said distal opening of said catheter; and~~, said continuing step thereby column loading said section as said wire body is mechanically pushed;~~

continuing to mechanically push said wire body out of said distal opening of said catheter~~,~~ thereby column loading said section as said wire body is mechanically pushed and ~~thereby~~ curving said section of said wire body toward a second wall portion of said blood vessel lumen, wherein said section frictionally locks against said second wall portion due to said column loading of said section, thereby forming a portion of said wire body crossing said blood vessel lumen and frictionally locked to said first wall portion and said second wall portion; and

repeating said continuing step until said section of said wire body has assumed a complexly curved shape, whereby said section repeatedly crosses said blood vessel lumen and frictionally locks against wall portions of said blood vessel lumen due to said column loading of said section, said section thereby forming curvatures in said complexly curved shape which vary continuously without breakpoints.

21. (Previously Presented) The method according to claim 1, wherein said steps of mechanically pushing said wire body comprises pushing on a guidewire coupled to said back end of said wire body.

22. (Previously Presented) The method according to claim 1, wherein said steps of mechanically pushing said wire body comprises pushing on a stylet abutting said back end of said wire body, said stylet being unconnected to said wire body.